MONTHLY WEATHER REVIEW

Editor, EDGAR W. WOOLARD

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METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR JANUARY 1943

[Climate and Crop Weather Division, J. B. KINCER, in charge]

AEROLOGICAL OBSERVATIONS

NOTICE.—Effective with the December 1942 issue, the publication of table 1 (RAOB summaries) was discontinued indefinitely.—EDITOR.

TABLE 2.—*Free-air resultant winds based on pilot-balloon observations made near 5 p. m. (75th meridian time) during January 1943. Directions given in degrees from North (N=360°, E=90°, S=180°, W=270°). Velocities in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (538 m.)			Albuquerque, N. Mex. (1,630 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (870 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (132 m.)			Charleston, S. C. (17 m.)			Cincinnati, Ohio (152 m.)			Denver, Colo. (1,627 m.)			El Paso, Tex. (1,196 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	309	1.8	30	264	1.8	25	243	2.7	27	268	2.7	30	330	2.6	26	131	1.6	26	134	1.2	26	313	1.0	29	306	0.8	28	258	1.7	28	232	2.3	31	294	1.2	31	266	1.6
500	---	---	---	---	---	---	25	244	4.1	---	---	---	---	---	---	---	---	---	26	161	2.5	26	249	1.6	29	255	2.3	28	265	4.2	28	232	4.6	---	---	---	---	---	---
1,000	30	288	1.5	---	---	---	24	259	6.0	---	---	---	29	311	4.4	26	128	1.3	23	179	3.1	17	248	3.3	28	279	5.4	26	270	7.3	19	247	6.9	---	---	---	---	---	---
1,500	30	263	4.3	---	---	---	23	275	11.0	27	284	7.0	23	302	6.6	26	242	2.2	20	207	2.4	11	312	1.3	21	305	8.1	24	274	11.2	14	257	8.3	---	---	---	31	278	2.2
2,000	29	267	6.9	30	259	2.4	22	280	14.4	27	283	8.3	19	301	10.6	20	254	4.4	18	244	4.0	---	---	---	16	312	10.1	21	272	13.5	12	276	10.0	31	270	2.2	30	274	3.4
2,500	28	261	8.8	30	268	4.6	19	276	16.6	23	287	12.0	16	302	12.8	17	268	6.5	16	250	5.4	---	---	---	14	303	10.8	20	271	15.0	10	282	13.9	30	280	5.4	29	259	5.7
3,000	28	260	10.6	29	280	6.4	16	275	19.4	20	297	13.7	13	305	15.2	15	294	8.1	15	245	6.5	---	---	---	11	283	11.5	20	272	17.6	---	---	---	28	279	9.2	26	277	8.3
4,000	26	259	13.7	27	281	11.3	15	277	22.4	17	303	16.6	13	304	15.8	12	311	11.4	14	260	8.1	---	---	---	---	---	---	17	272	20.4	---	---	---	27	282	14.2	22	270	11.4
5,000	26	264	16.0	23	295	11.9	13	275	22.5	15	312	18.3	12	298	20.9	12	306	15.3	14	265	9.6	---	---	---	---	---	---	12	270	20.2	---	---	---	26	281	16.1	21	274	10.8
6,000	24	261	18.3	22	294	11.3	11	281	25.1	14	307	20.2	11	300	17.5	10	309	19.1	13	268	12.5	---	---	---	---	---	---	11	275	22.2	---	---	---	25	288	18.7	17	275	12.5
8,000	12	270	18.4	14	297	15.8	---	---	---	---	---	---	---	---	---	---	---	---	11	267	18.3	---	---	---	---	---	---	---	---	---	---	---	---	18	276	23.9	13	293	14.7
10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,413 m.)			Greensboro N. C. (271 m.)			Havre Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (573 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (410 m.)			Miami, Fla. (15 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (194 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	31	319	0.7	30	323	1.3	23	240	2.9	26	257	2.5	29	220	0.7	24	287	2.2	31	60	1.8	31	256	2.3	21	354	0.7	30	121	2.4	25	225	1.8	29	238	2.3	28	309	3.2
500	---	---	---	---	---	---	23	240	5.6	---	---	---	29	248	3.1	24	283	2.9	---	---	---	31	238	2.9	21	353	0.6	30	106	2.7	24	253	2.0	29	230	4.3	28	285	5.2
1,000	---	---	---	---	---	---	23	246	8.2	26	254	5.2	27	251	5.6	21	285	5.6	31	70	1.6	28	264	5.2	21	192	2.1	26	175	0.6	23	283	3.4	28	240	6.0	24	285	7.5
1,500	---	---	---	30	317	1.4	23	263	11.2	26	273	7.4	27	255	7.9	18	281	9.5	31	303	1.0	26	274	7.6	20	219	3.8	25	219	1.6	21	290	6.9	21	265	12.1	22	283	9.7
2,000	31	309	1.0	30	286	1.6	22	274	14.5	26	286	9.5	25	264	10.7	16	287	11.9	28	296	1.9	26	268	11.2	17	246	4.5	18	244	3.1	21	277	8.9	19	271	13.5	13	296	10.4
2,500	31	279	2.8	29	244	3.6	21	280	18.5	26	292	11.9	24	265	12.7	15	295	14.2	26	284	2.5	22	268	14.0	12	296	5.4	18	247	4.5	21	269	11.4	19	273	15.6	---	---	---
3,000	27	308	3.3	27	256	4.9	21	276	19.6	24	297	13.1	24	264	14.2	14	292	15.1	26	282	3.2	19	274	16.0	---	---	---	17	250	6.4	16	279	13.0	15	278	18.4	---	---	---
4,000	23	310	7.8	22	283	9.9	15	272	26.6	15	291	15.7	23	265	15.6	---	---	---	25	309	5.2	15	276	19.5	---	---	---	17	260	6.5	16	270	16.6	12	280	23.1	---	---	---
5,000	22	305	10.5	18	297	12.8	12	268	29.7	---	---	---	21	259	15.1	---	---	---	24	322	7.6	12	274	20.9	---	---	---	15	249	7.4	14	271	17.2	---	---	---	---	---	---
6,000	20	298	12.2	11	290	11.4	11	269	32.1	---	---	---	18	268	17.3	---	---	---	24	317	8.6	---	---	---	---	---	---	14	255	9.5	13	275	19.8	---	---	---	---	---	---
8,000	18	308	13.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23	310	10.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10,000	17	318	15.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23	320	10.9	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	20	304	9.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	17	284	15.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (402 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (388 m.)			Rapid City, S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			St. Paul, Minn. (225 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (15 m.)			Sault Ste. Marie, Mich. (230 m.)			Seattle, Wash. (12 m.)			Spokane, Wash. (503 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity	Observations	Direction	Velocity
Surface	28	257	0.5	28	343	1.6	27	289	1.8	31	128	0.4	28	360	3.9	28	297	2.7	27	286	1.4	30	140	0.4	28	256	2.7	23	315	1.9	24	318	0.2	25	248	1.1	24	21	0.3
500	28	61	2.1	28	309	1.2	27	275	2.4	31	107	0.8	---	---	---	28	290	3.8	27	286	1.9	30	221	0.6	28	250	1.7	23	305	2.7	24	212	1.7	---	---	---	24	253	1.6
1,000	27	22	1.3	28	258	2.3	27	271	4.7	31	115	1.3	28	359	4.0	24	267	5.0	24	276	5.4	28	253	1.0	26	164	0.6	21	293	4.4	19	218	2.8	25	217	1.0	20	238	7.3
1,500	25	5	1.6	27	285	5.3	24	281	7.5	31	183	1.0	28	298	6.8	26	285	6.5	22	280	9.2	27	254	3.4	25	303	0.4	13	284	3.6	17	229	2.6	16	217	4.3	18	271	12.6
2,000	22	341	3.1	26	278	7.5	22	278	10.7	30	227	1.1	27	299	10.8	20	290	10.4	20	278	11.6	26	250	5.8	23	347	2.4	11	271	5.8	14	292	3.3	10	257	7.8	18	277	16.8
2,500	22	320	3.3	25	277	10.7	22	282	12.2	29	255	1.5	25	297	14.5	18	293	12.5	15	275	14.1	24	249	7.8	21	316	3.6	---	---	---	14	288	6.3	---	---	---	15	279	18.7
3,000	21	328	4.9	24	274	12.5	21	280	14.0	29	275	3.7	23	303	16.0	18	286	13.6	11	274	13.4	21	260	11.1	21	310	4.7	---	---	---	13	287	9.3	---	---	---	15	278	21.9
4,000	15	346	4.5	24	273	16.3	19	283	15.7	26	279	4.4	20	303	17.7	18	282	16.4	---	---	---	18	260	13.2	16	340	5.0	---	---	---	---	---	---	---	---	---	14	277	25.6
5,000	13	10	4.2	23	272	19.4	16	280	19.0	23	291	5.3	16	297	18.4	16	282	18.6	---	---	---	17	262	14.8	15	334	6.5	---	---	---	---	---	---	---	---	---	10	275	28.3
6,000	13	356	3.7	21	274	23.6	14	284	20.8	22	302	5.8	15	295	24.3	12	290	20.5	---	---	---	15	264	15.6	12	304	9.9	---	---	---	---	---	---	---	---	---	---	---	---
8,000	12	337	1.0	15	288	23.5	---	---	---	18	280	8.7	13	292	24.8	---	---	---	---	---	---	11	273	17.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 3.—*Maximum free-air wind velocities (m. p. s.), for different sections of the United States based on pilot-balloon observations during January 1943*

Section	Surface to 2,500 meters (m. s. l.)					Between 2,500 and 5,000 meters (m. s. l.)					Above 5,000 meters (m. s. l.)				
	Maximum velocity	Direction	Altitude (m) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m) m. s. l.	Date	Station	Maximum velocity	Direction	Altitude (m) m. s. l.	Date	Station
Northeast [1]	46.8	nw.	1,550	21	Caribou, Me.	49.7	nw.	3,050	21	Portland, Me.	90.5	w.	13,550	29	Portland, Me.
East-Central [2]	46.8	wnw	2,500	4	Knoxville, Tenn.	62.4	w.	5,000	4	Greensboro, N. C.	69.0	sse.	8,210	13	Washington, D. C.
Southeast [3]	37.2	wnw.	2,500	10	Jacksonville, Fla.	48.0	wnw.	4,150	10	Jacksonville, Fla.	52.0	w.	8,030	20	Tallahassee, Fla.
North-Central [4]	45.6	w.	2,150	22	Rapid City, S. Dak.	53.4	wnw.	3,310	5	International Falls, Minn.	62.0	nnw.	7,120	11	Fargo, N. Dak.
Central [5]	49.2	sw.	1,580	15	Kansas City, Mo.	52.0	nw.	4,720	14	North Platte, Nebr.	75.2	wnw.	14,700	10	Wichita, Kans.
South-Central [6]	44.2	wnw.	2,160	9	Little Rock, Ark.	41.6	wsw.	2,900	16	Texarkana, Ark.	113.0	sw.	17,090	23	Amarillo, Tex.
Northwest [7]	49.0	wnw.	1,260	15	Pendleton, Oreg.	60.0	wnw.	3,700	15	Burns, Oreg.	80.0	nw.	10,720	18	Boise, Idaho.
West-Central [8]	60.8	w.	2,480	20	Cheyenne, Wyo.	67.0	wnw.	4,700	15	Ely, Nevada	70.0	nw.	12,920	18	Ely, Nev.
Southwest [9]	39.2	w.	2,370	16	El Paso, Tex.	42.6	wnw.	5,000	18	Albuquerque, N. Mex.	62.8	nw.	8,700	25	Tucson, Ariz.

[1] Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and northern Ohio.
[2] Delaware, Maryland, Virginia, West Virginia, southern Ohio, Kentucky, eastern Tennessee, and North Carolina.
[3] South Carolina, Georgia, Florida, and Alabama.
[4] Michigan, Wisconsin, Minnesota, North Dakota, and South Dakota.
[5] Indiana, Illinois, Iowa, Nebraska, Kansas, and Missouri.
[6] Mississippi, Arkansas, Louisiana, Oklahoma, Texas (except El Paso), and western Tennessee.
[7] Montana, Idaho, Washington, and Oregon.
[8] Wyoming, Colorado, Utah, northern Nevada, and northern California.
[9] Southern California, southern Nevada, Arizona, New Mexico, and extreme west Texas.

RIVER STAGES AND FLOODS

By BENNETT SWENSON

Precipitation during January 1943 was extremely heavy in most sections west of the Rocky Mountains, while in the central interior sections of the country extremely dry conditions prevailed. Nevada and California had the wettest January since 1916, although parts of southern California were very dry during much of the month. Montana had more precipitation than in any January since 1909 and North Dakota, since 1933. On the other hand, Oklahoma, Missouri, Arkansas, and Iowa were the driest of record, Oklahoma having an average of only 0.08 inch during the month.

There were marked changes in temperature in January, alternating between very warm and very cold over much of the country. The mean temperature for the month was below normal across the northern third of the country and above normal in most of the remainder of the country.

Floods occurred during the month in California, Oregon, Nevada, and portions of the Southeast. The flood which originated during December in the Ohio River Basin, crested at Marietta, Ohio, on January 1 and reached the mouth of the Ohio by January 11.

St. Lawrence drainage.—Considerable snow has accumulated in the upper Lakes Region, the snow cover at the end of the month ranging from about 3 inches in southern Michigan to over 3 feet in northern Michigan and Wisconsin. The total snowfall for the winter season through January at Lansing, Mich., was about 47 inches, which represents more than the average total fall for the entire winter season.

A rise occurred in the Grand River at Grand Rapids, Mich., on January 17, due to an ice jam, but flood stage was narrowly averted.

Atlantic slope drainage.—The snow cover at the end of January extended as far south as Maryland and northern Virginia. Maximum depths of more than 3 feet were found in northern New York and New England. Ice in the rivers ranged from about a foot in northern Connecticut to over 2 feet in northern Maine. Mostly floating and shore ice were reported in eastern Pennsylvania, while in the Hudson River at Albany, 10 inches of ice was observed.

Heavy rains on January 18–19 and again on January 27–28, caused light to moderate floods in most of the streams from North Carolina southward.

Rains averaged about 2 inches over the Yadkin and upper PeeDee River basins on the 18th–19th and a moderate flood occurred in the PeeDee, cresting at 33.8 feet at Cheraw, S. C., on the 20th. On the 27th–28th an average of about 2.5 inches of rain occurred in the upper Yadkin Basin. This time Cheraw, S. C., crested at 34.7 feet on the 29th.

In the Santee River basin, average rainfall amounts in the two storm periods were as follows: Saluda River, 4.45 inches on the 18th–19th and 2.92 inches on the 27th–28th; Broad River, 3.32 and 3 inches; Catawba-Wateree River, 2.46 and 1.75 inches. Floods were mostly light with little damage resulting.

An average of 2.25 inches of rain in the Savannah River basin on the 18th–19th resulted in a crest stage of 33.3 feet at Augusta, Ga., on the 20th. Further rains on the 28th caused another slighter rise. Damage was light.

Sharp rises occurred in the upper Ocmulgee and Oconee Rivers from the heavy rains on the 18th–19th, which averaged 4.5 inches above Macon, Ga., and 3.4 inches above Milledgeville, Ga. Unusually heavy rains of over 7 inches fell at Hawkinsville and Dublin, Ga., in the middle portion of the basin, within 24 hours. The Oconee River crested at Macon on the 20th at a stage of 22 feet, 4 feet above flood stage, and the Ocmulgee River crested at Milledgeville on the same day at 28.4 feet, 8.4 feet above flood stage.

Another, but a lesser, rise occurred from the further rains on the 28th. However, stages in the lower reaches were already high and only slight rises occurred at the lower stations.

Flood stages were exceeded at all points in the Altamaha River system, except at Doctortown on the Altamaha. Slight damage was caused by the flood in the middle and lower reaches of the basin.

East Gulf of Mexico drainage.—Heavy rainfall from January 17–19, averaging 4 to 5 inches over northern and middle portions of the Chattahoochee River basin resulted in flood stages at all points south of Columbus and Montezuma, Ga. The Flint River crested at Albany, Ga., on the 22d at a stage of 32 feet, 12 feet above flood stage. At Eufaula, Ala., the Chattahoochee River reached